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Housing by Design:

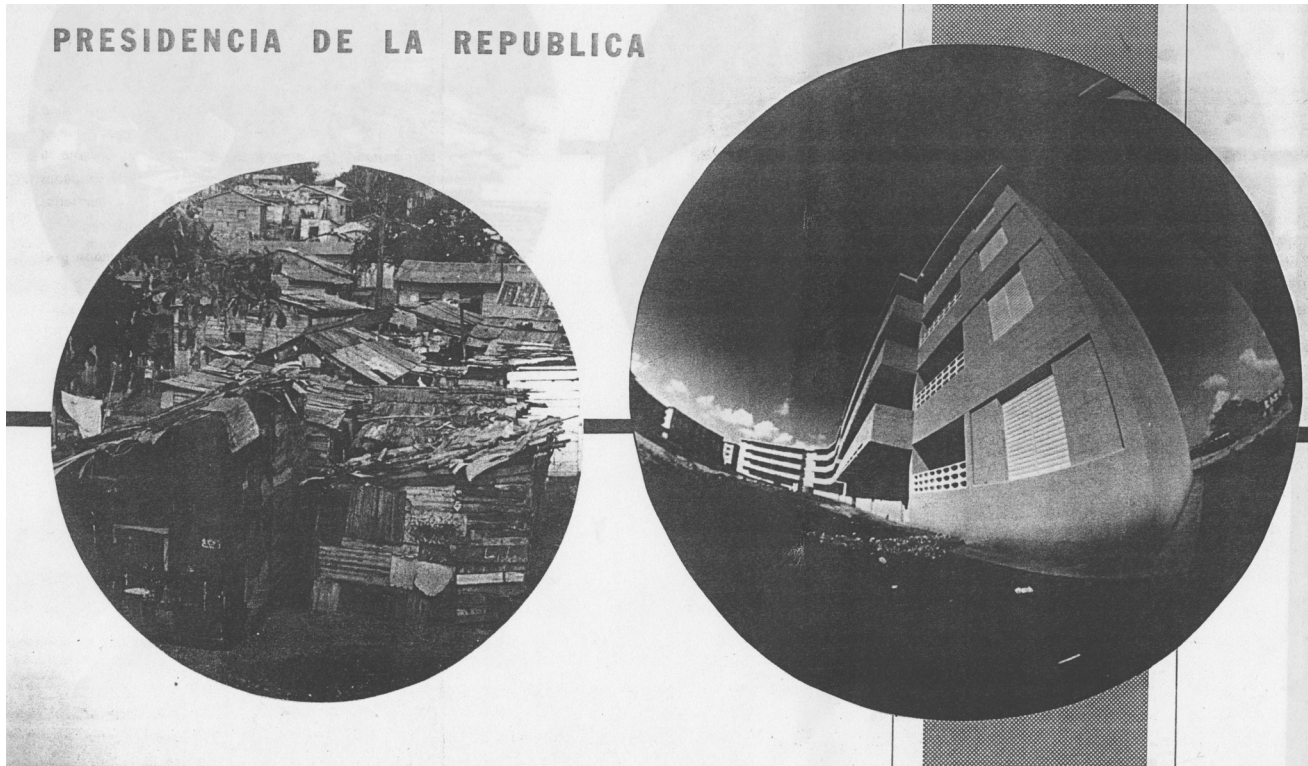
Challenging the Public Housing Model in El Caliche, Santo Domingo

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abstract

Many developing countries bear the traces of large-scale public housing construction as a solution for housing the urban poor. In El Caliche, an informal neighborhood in the Dominican Capital, three public housing complexes line the edge of the settlement. The structures were built to rehouse approximately 200 families who were displaced by a ring-road project in 1986. The physical structures are at a different scale than the one-, two-, and three-story homes that predominate in El Caliche. The following paper compares the public housing with the surrounding city fabric that developed informally. The stark contrast between the adjacent housing types illustrates what costs and benefits are associated with multi-story public housing and some alternative approaches are proposed as a result of the case study.



The cover image is taken from a 1968 policy document produced under Joaquin Balaguer.



El Caliche housing blocks.

State-provided housing has been challenged as an effective housing policy in many countries and by international organizations.¹ However, in some instances direct housing provision may be the only recourse for settling large numbers of displaced families or guiding urban growth. The following case study compares the informally developed parts of El Caliche in the Dominican capital Santo Domingo with state-constructed multi-family public housing units to understand the costs and benefits of those housing types, which have been developed as public housing. After defining the terminology and describing the neighborhood, the site and its potential are analyzed. This analysis leads to an alternative site plan for the area, which could provide the basis for a new public housing system. The study makes a case for developing other options that are more sustainable in the long run than past attempts to rehouse families.

public housing in the Dominican Republic

Most of the public housing constructed in the Dominican Republic is located in and near the capital city, Santo Domingo. Under Joaquin Balaguer's first stint in power, he initiated a construction frenzy including entire public housing neighborhoods in the city. From 1966 to 1978, more than 2,000 units of public housing were built throughout the country according to a public policy document from 1968 and interviews with local architects. The units were intended to accommodate the growing urban population flocking to the city after travel bans were lifted that had been instituted by the previous dictator Trujillo.

Figure 1 locates significant concentrations of public housing in the city. Some developments are very large and were designed as neighborhoods with churches, schools, and other community amenities. The adjacent photographs illustrate some of the public housing developed under Balaguer. Many of the projects were planned in undeveloped areas and were self-contained. Today, the developments connect uneasily to the city's urban fabric, which has enveloped them. Photographs on pages 3 and 4 show some examples of public housing in Santo Domingo.

The public housing structures are easily differentiated from the predominant housing types found in the city. The key characteristics used here to define public housing are:

- superblock footprints
- residents paying minimal or no maintenance costs
- multi-story
- form of tenure it typically rental or free
- walk-up with exterior corridors and stairwells

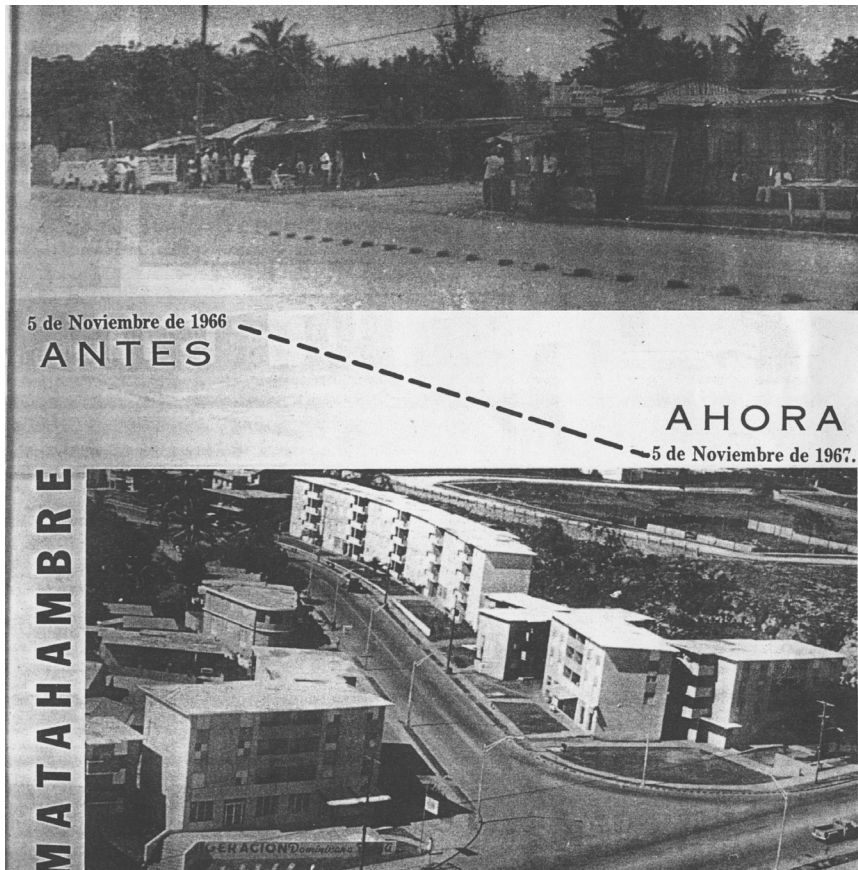


Honduras housing development, 60s.



Housing development near Honduras, 60s.

Arch. Rafael Tomás Hernández and engineer José Miguel Mondesí designed units that introduced a new housing typology into the urban fabric. And when the developments were constructed from the 1960s to 1980s, they were hailed as alternatives to sub-standard housing. A 1968 document produced by the Balaguer regime touts the improved living conditions. The superbblock pattern did not exist within the urban fabric. Unlike most housing at the time, the structures are multi-story (approximately 5-6 stories in most cases) walk-ups with exterior stair wells and corridors. While some developments like Honduras included single-family homes, most developments were designed as apartment complexes to house families of different sizes. Another important characteristic of public housing was the dependence on public maintenance and the lack of homeownership. Even today, most residents do not seem to pay rent or fees for common areas.



Matahambre housing development, literally “against hunger”. From 1968 Balaguer policy document.



Hoyo de Chubín housing development.



Los Jardines housing development.

El Caliche

With a legacy of grand construction projects, Balaguer returned to his development plans when he regained power in 1986. He continued a major ring-road project around the city called Av. P. de los Reyes Catolicos, which was designed cutting through several informal settlements in the north of the city including El Caliche. Figure 1 shows the course of the road and Figure 3 outlines the portion of El Caliche that was destroyed as a result. The aerial photograph in Figure 2 provides an urban context for the neighborhood.

Approximately 6,500 square meters of settled land were cleared and a corridor was cut through the hill to accommodate a six-lane road. According to interviews, the project displaced approximately 200 people and divided the El Caliche neighborhood into two distinct districts, El Caliche and El David, separated by a deep gorge. The affected families were moved to temporary shelters shown in Figure 3 near the cemetery, Cementerio Obrero, on the eastern side of El Caliche while waiting to be resettled in newly built public housing structures. Some families moved to other barrios while others waited to be assigned a public housing apartment. Units were allotted based on a government appraisal of each family's home prior to clearing the site. The last displaced families were resettled in the apartment blocks after approximately two years according to interviews conducted with current residents.

Approximately 100 families live in the “bloques” as they are known within the El Caliche community. Figure 4 shows how the buildings were laid out on the edge of gorge that was pierced for the ring road. As shown in the plan, block A is smaller than blocks B and C, which are two full slabs of units connected by common open interior stairs. Block A is subdivided into three smaller slabs two of which share an interior courtyard. The interior courtyards and leftover spaces between the buildings are populated by the children living in the apartments and house some small commercial activities. A fruit stand and colmado (local name for a corner grocery store) are located within the blocks and some small stores line the southern edge of block A's ground floor. Also, some residents sell goods from their apartments. The adjacent photographs give a sense of the commercial activities in the blocks. There is no landscaping with the exception of sporadic clusters of trees or spontaneous vegetation. On some site boundaries, a relatively dense thicket separates the blocks from the rest of the El Caliche.

Each building is five levels with eight apartments per level in each wing. The units are approximately 7 meters by 10 meters and some families have combined adjacent apartments. The unit plan in Figure 5 shows the layout with an interior balcony space and an exterior balcony overlooking the gorge or the El Caliche neighborhood.



Colmado in block B.



Selling ice cream on the top floor of block B.

Over the course of two weeks, a group of three graduate students (two from MIT students and one from the Dominican Republic) interviewed four families in depth several times as well as other residents more casually. The group also spent two afternoons with children playing in the blocks. Ranging from 4 years to 12 years, some children were living in the blocks and others were visiting friends from other parts of El Caliche.

housing by design or not

The public housing blocks in El Caliche were designed by the same architect who designed the early large-scale projects initiated by Balaguer, Arch. Thomas Hernandez. One basic unit type accommodates the needs of a diverse array of residents whose homes differed significantly in the original settlement if the demolished part was similar to existing informal settlements in El Caliche today. For several reasons, the units in the three blocks may not provide ideal homes for all the families living there:

- The consolidated parts of El Caliche burden the state less than the blocks.
- Construction and maintenance costs are higher in the blocks.
- Families face social costs of living in the blocks.
- Not all residents enjoy living in the blocks.

First, the apartment buildings fall under the state's supervision at least in principal. While most of the space in the greater El Caliche settlement falls under the stewardship of specific families the collective open spaces and utilities in the blocks do not. The impersonal nature of the apartment buildings induces many residents to defer to state-provided upkeep, which does not take place on a regular basis. State agencies do not have the capacity to maintain the structures nor do they feel responsible for regular upkeep. Residents did not mention a state agency that was responsible for providing services to residents. The community at-large also lacks tailored state support but the physical characteristics of the neighborhood do not depend on significant and continued outside maintenance, especially in those areas that have been consolidated.² Utility services are no more problematic in the consolidated sectors of El Caliche than in the rest of Santo Domingo. The upgraded areas of El Caliche are serviced by trash collection agencies but no other major upkeep seems to be required to maintain current conditions. If the same number of residents can live comfortably in the neighborhoods of El Caliche as in the blocks, it indicates that the blocks are unnecessarily burdening the state. And when the state fails to assume its



Disrepair in block A.

responsibility the cost is transferred to residents who suffer from poorly serviced buildings and poor utility access.

Second, construction and ongoing maintenance costs in five-story apartment buildings are higher.³ In his research on Peru, John Turner showed how much of the cost of public housing consisted of administrative fees and other extraneous costs wholly unrelated to construction or immediate needs. So higher costs in public housing often do not reflect better construction or higher-quality units.

Managing maintenance fees in multi-family public housing structures is even more difficult. Currently, residents do not pay a regular fee for upkeep, which the deterioration shown in the photograph on page 6 proves. In one effort to improve the buildings, residents attempted to collect a proportionate contribution from each household to repaint the blocks' exterior façades. Some families refused to pay into the pool. As a result, the tenant organization's effort was stalled and the buildings were only painted in those portions where households contributed. The patchwork of colors on the exterior walls (see photographs below) attests to the complex dynamics that drive groups.

Poor utilities cause families the most inconveniences. Water is pumped to the upper floors so those residents living on the first two or three levels have much higher water pressure than those living on the upper floors. Ironically, the highest- and lowest-income families share the upper floor. The higher-income families have installed roof pumps to provide water to their units. The lowest-income families are forced to carry water from lower floors up to their units on the upper level. With no authority in charge, the inconsistent service level will persist within the blocks.

Maintenance costs are closely related to the type of payments residents make. None of the residents in El Caliche were paying rent or maintenance fees. Rental rates may be intended as part of the public housing system but they are not collected. The end-result is a significant hidden subsidy to certain families, which decreases the ability of the housing policy to target specific groups in need.

Third, social costs result from the physical design of the housing blocks that augment the costs of maintenance. The blocks situated on the edge of the settlement away from the densest commercial uses where multi-story buildings generate the most land value from a development stand-point. Their location further reinforces the separation between El Caliche and the portion of the neighborhood situated across the highway.



Patchwork collective painting effort.



Dark interior spaces.

Not only the location but also the design of the structures impacts families negatively. The photograph on page 7 shows how the buildings are oriented towards interior courtyards. The 10-meter wide space remains dark for much of the day. While the hot climate necessitates shade the ground level feels enclosed and almost like an interior space. The portion under the balconies and stairwell is always completely dark. None of the units have a particular claim on the ground level public space. However, some ground-level residents have “privatized” small portions of the courtyard around their entrances. These public spaces differ significantly from the open spaces and sidewalks in other parts of the neighborhood. Most pocket spaces or sidewalks are clearly associated with specific units. Streets and small open spaces do not require programming and are maintained by residents living nearby. The public spaces in the blocks are neither associated with users nor are they programmed. Children do not have a playground, which was mentioned in several interviews. In the photograph below, children use the defunct trash collection screens as soccer goals.

Growing families are further disadvantaged because they cannot invest incrementally in their housing. It is expensive to improve an apartment and nearly impossible to expand a unit within the blocks. Only a large cash-outlay like moving into two units would considerably increase the amount of available housing. One family living on the top floor was able to consolidate two units into one, improve the roof, and install a water pump. Their interior balcony is shown here with new roofing tiles to improve storm water drainage.

Having listed the most important failings of the public housing blocks, it should be noted that the rigid structure and needed state-maintenance suits certain residents well. Older, more established residents with grown-up children seemed happy with their units. They had mostly been able to improve the utilities, amenities, and finishings in their apartments. Clearly, some families were benefiting more from the characteristics of public housing (even those listed as a disadvantage above) than others. The state’s current approaches seem to be responding to different needs and projects include a more diverse array of unit types.



Individually upgraded units.



Children playing between the blocks.

assessing the site

Many of the characteristics described previously apply to public housing in other locations. Possible alternatives result from understanding a site's size and potential density with different housing types. The existing building footprints and associated open space cover 3,600 square meters. Blocks A and B have eight apartments per floor and block A has five units on each level making the total number of apartments 105. It is difficult to estimate the number of residents as household sizes vary significantly. One of the interviewees lived with her sister, father, cousin, and three young children. Another interviewee lived with her husband and occasionally her grown-up son would stay with them. As a result of household variation, comparing land-coverage ratios in the housing blocks to the consolidated parts of El Caliche can be misleading. In terms of site coverage, approximately 70% of the public housing site is built up compared to at least 90% throughout El Caliche.

The drawings in Figures 6 and 7 compare grain and density of the housing blocks to the existing urban fabric. The discrepancy shows clearly in the figure ground representation. While the blocks concentrate units, density is higher in other parts of the neighborhood suggesting that another form of housing would have been more appropriate and accommodated residents according to their needs. Figure 8 shows the grade changes on the site that have been aggravated by the road construction project, which cut through the 40 meter hill.

alternatives

The diagram in Figure 9 shows how families could be served and how higher densities (like the ones shown for a typical retail street in the consolidated portion of El Caliche) could be achieved without causing crowding. A state-provided alternative to the public housing blocks could set forth a framework for guiding future development on the public housing site to reap the benefits of implementing a coherent design and building a high-density urban neighborhood. The following section suggests some basic guidelines for developing an alternative model.

The city carries a legacy of unit types that were constructed in older parts of the city during the late nineteenth and early twentieth century to accommodate lower-income families in urban settings. These homes provide a useful template for developing more sustainable unit types in state-provided housing. Ciudad Nueva was planned on a high-density grid that incorporates green spaces for communal use and retail spaces like the one shown here. Throughout the 1930s, small firms developed many different types of affordable urban homes. Groups of homes like the one shown in the adjacent photograph dot the Ciudad Nueva landscape. Each project comprises four to eight housing units that are contiguous



Consolidated street in El Caliche.



Retail facades in El Caliche.

with the rest of the urban fabric in the neighborhood. Many of the later homes are two and three stories and almost all units are laid out in a very distinctive floor plan that is unique to Santo Domingo. The unit entrance leads to a corridor, from which the formal rooms are accessed or to a small exterior courtyard at the back of the house. The presentation rooms face the street and the courtyard. Bedrooms and the kitchen line one side of the small paved courtyard.⁴

Based on existing consolidated units in El Caliche and historic precedents, a 7 by 10 meter unit prototype was laid out on the area covered by the public housing buildings today. 48 units footprints could be placed on the site to recreate the neighborhood feel within the consolidated part of El Caliche. In other words, a different prototype could generate the same density as the public housing blocks.

The typology also includes open spaces and retail on intersections. Like in Ciudad Nueva small parks could be incorporated into the plan. However, it is likely that these open areas would be settled by informal dwellers rapidly. Smaller and highly programmed open areas would be the most beneficial.

The proposed unit footprint generates social and economic benefits. The site plan proposed above provides a more desirable framework for the community as a social construct. Units do not have to be fully completed for families to move in, which shortens the resettlement phase. The units can be continued incrementally to suit the needs of each household or group of households optimally. To ensure that families invest in their homes, a small lending program could accompany the housing program. Either through microloans or lending of construction materials families could upgrade their homes based on need. GTZ attempted a microloan program in the course of its comprehensive upgrading effort that went bankrupt when borrowers failed to repay their loans. Another loan program would have to be implemented under careful management as well as community oversight. The loan programs also allow families to invest in their housing, an important source of savings for children and retirement. The program could encourage home-ownership but renters would continue to have access to housing as some families decide to expand a second story into a rental unit, for example.

Units will also have to accommodate home-based enterprises and retail locations. Intersections are highlighted in the site plan above but each unit should provide enough space for a potential retail or business use. Throughout El Caliche, dense commercial spaces line the ground floors along the main streets. Similar retail activity should be allowed to grow within the state-provided housing developments.



Typical home in Ciudad Nueva.



Corner retail space in Ciudad Nueva.

Some of the desirable elements of a successful housing program listed above are being developed for the barrios by CONAU (Consejo Nacional de Asuntos Urbanos). The Resure project was the largest comprehensive effort to develop an action plan that includes significant amounts of state-led infrastructure and housing development. The units are stacked with individual entrances and the floor plans resembling those described in Ciudad Nueva. Plans for one unit prototype are shown below. Unfortunately, political swings have halted construction and the first project at La Szurza, one of the most distressed barrios, remains uncompleted as the photographs below show.

Local architects have also attempted to propose apartment buildings, which are economically viable and accommodate the needs of lower-income families. Arch. R de Moya developed an affordable building type that would become a base module for redeveloping neighborhoods. In small areas, these high-density buildings may complement the type of development described above and cater to the needs of those families who prefer or need apartments. His unbuilt proposal is shown on the next page and includes an urban design scheme, which calls for higher densities at intersections and an urban grid.



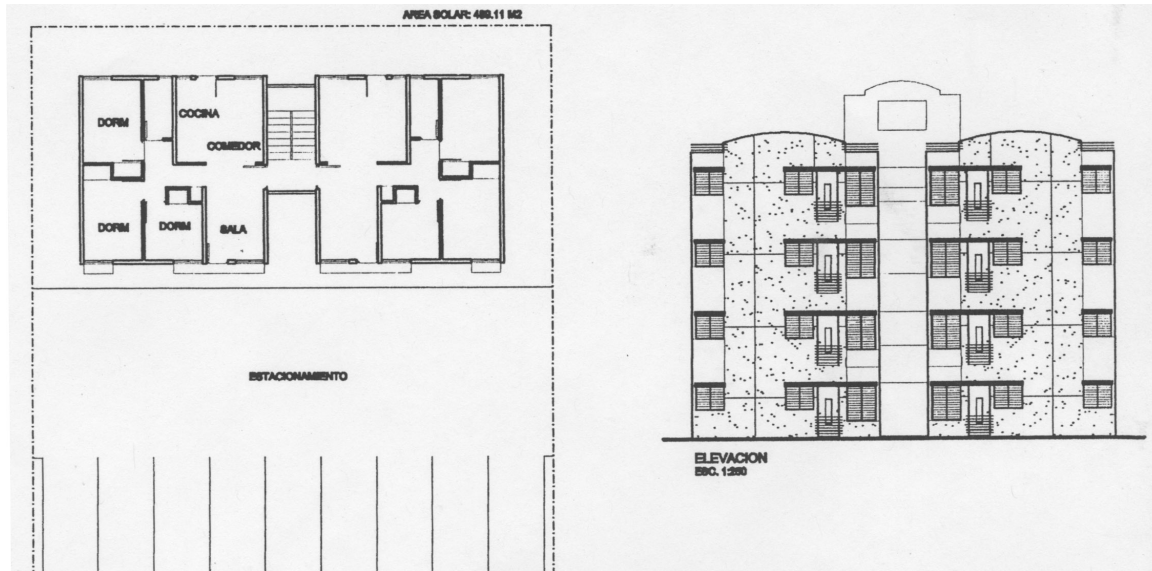
Planned units for Resure.



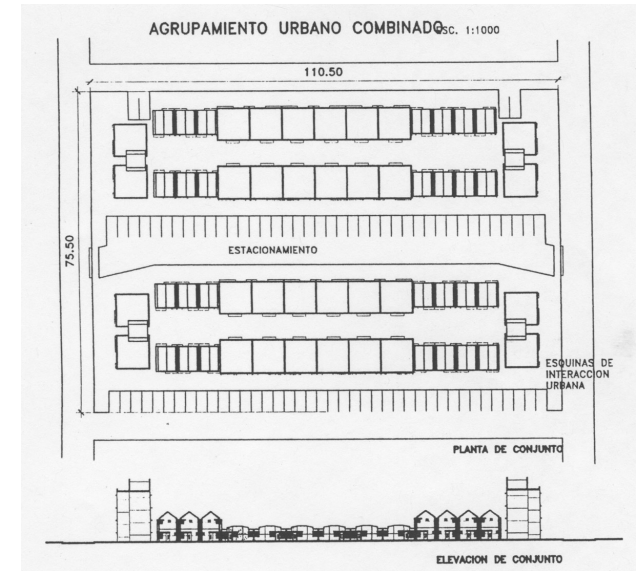
Unfinished Resure buildings at La Szurza.



Unfinished Resure buildings at La Szurza.



Apartment building proposal by Arq. R. de Moya.



Urban design scheme for housing proposal.

conclusion

Rethinking existing public housing developments to create sustainable alternatives for the future will play an important part in a forward-looking housing policy in the Dominican Republic. Studying El Caliche indicates that alternative solutions for resettling displaced families need to be developed, especially in a country where low-income families are regularly displaced by hurricanes. A comprehensive strategy should include some multifamily structures but also capitalize on the existing strengths of the housing industry and market. In a report completed for the Inter-American Development Bank (IADB) in 2000, Shlomo Angel analyzes housing conditions in the Dominican Republic. He shows that housing units are available and also slightly improving in quality. However, some units are remaining below standard, which reflects the unequal income distribution within the country.⁵ Poorer families do not have enough disposable income to access higher quality housing and many of these families are not receiving subsidies in the form of public housing units. And yet in Santo Domingo, 65% of all housing is unauthorized and approximately three quarters of the total housing production in the country is informal. This reality suggests a widening gap between the public housing structures of the past and current housing conditions in the city. More innovative and flexible, less “designed” approaches to redevelopment would build on the vibrancy of the informal sector, assist residents, and decrease the long-term burden on the state.

(Footnotes)

1 Shlomo Angel. *Housing Policy Matters: A Global Analysis* (New York: Oxford University Press, 2000).

2 The GTZ upgraded the parts of El Caliche in the late 1980s. GTZ (Deutsche Technische Zusammenarbeit). *Städtische Projekte der Deutschen Technischen Zusammenarbeit*. September 2002.

3 Sina del Rosario cites John Turner’s studies in Peru comparing the cost of building in public housing to smaller structures. *Garbage Housing in Informal Settlements*. M.Arch. Thesis, McGill University, Montreal, Canada, June 1992, p. 18.

⁴ Interview with Arq. Marcos Barinas.

⁵ The Gini index for the whole country was 51.5 in 1998.

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1. city map of Santo Domingo

Rio Isabela

Hoyo de Chubin,
Resure

El Caliche

Cementerio Obrero

Av. P. de los Reyes
Catolicos

Los Jardines

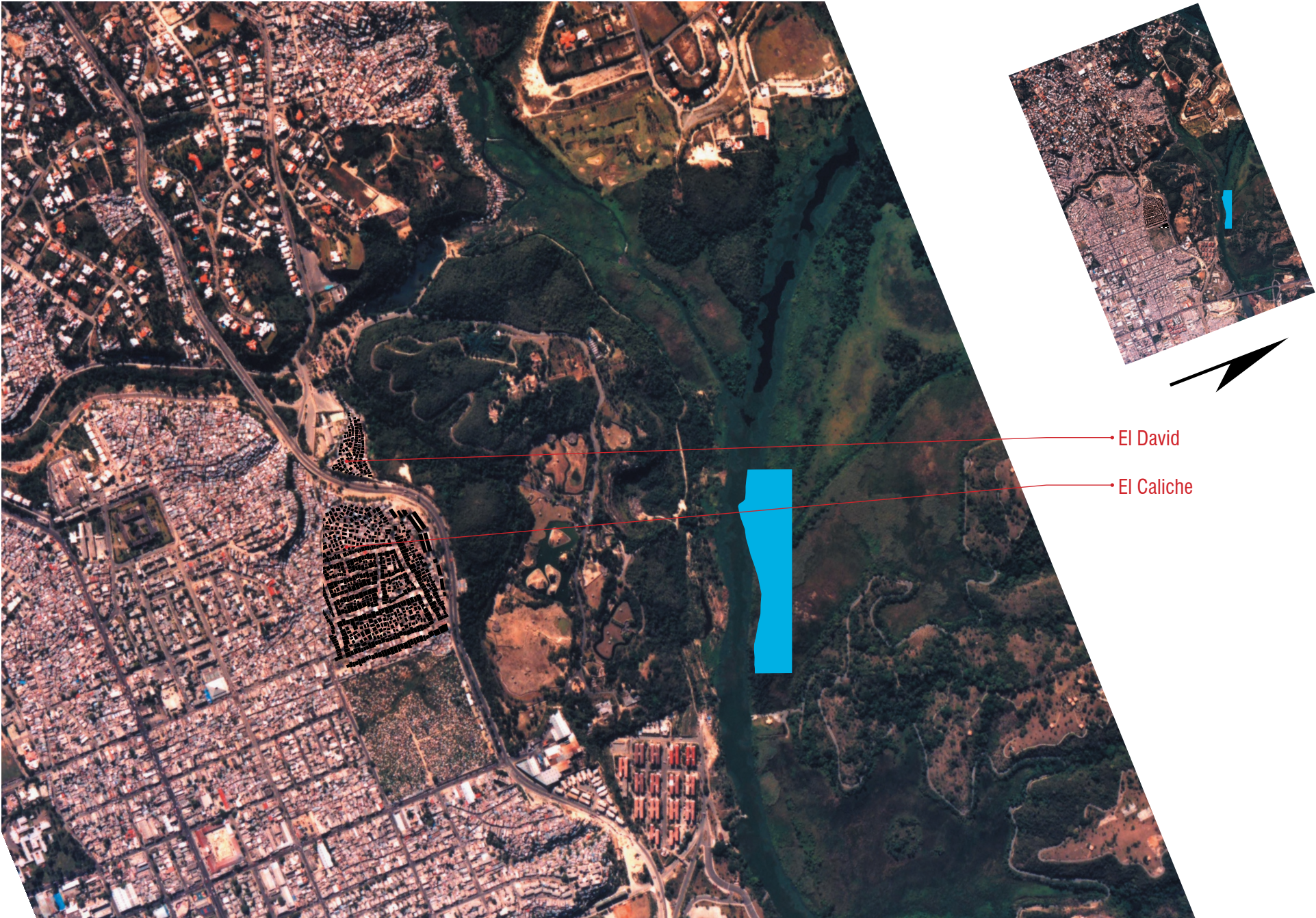
Ciudad Nueva

Matahambre

Honduras



2. aerial photograph



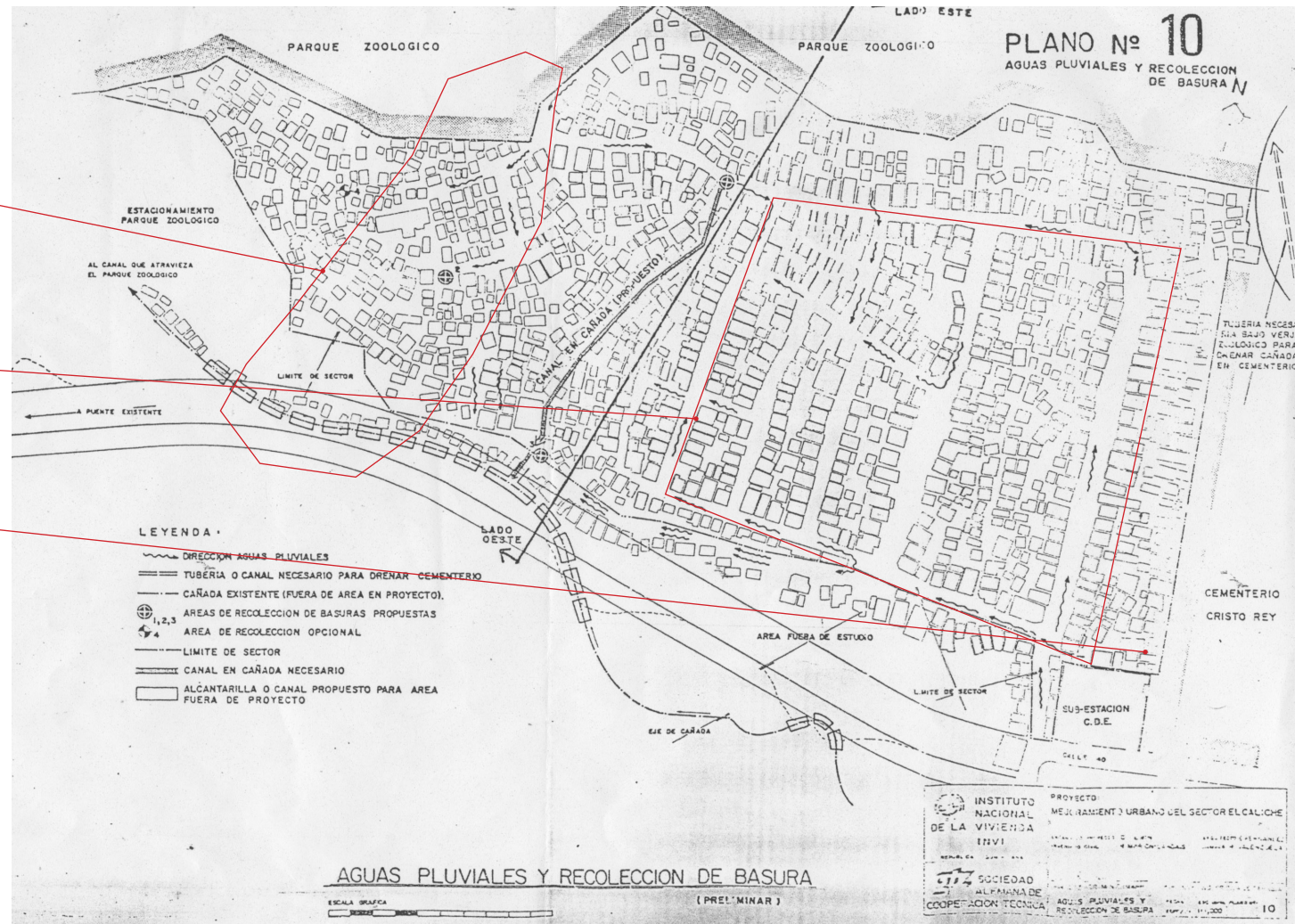
Aerial Study of El Caliche.

3. original El Caliche settlement.

Approximate area cleared for ring road project.

Approximate area referred to as the consolidated part of El Caliche in the text.

Approximate location of temporary shelters.



Watershed study by GTZ of El Caliche prior to ring-road project.

4. close-up figure ground of study area



The public housing blocks are easily distinguishable from the rest of El Caliche to the north of the settlement.

5. public housing unit plan



Typical corner unit plan.

6. figure ground

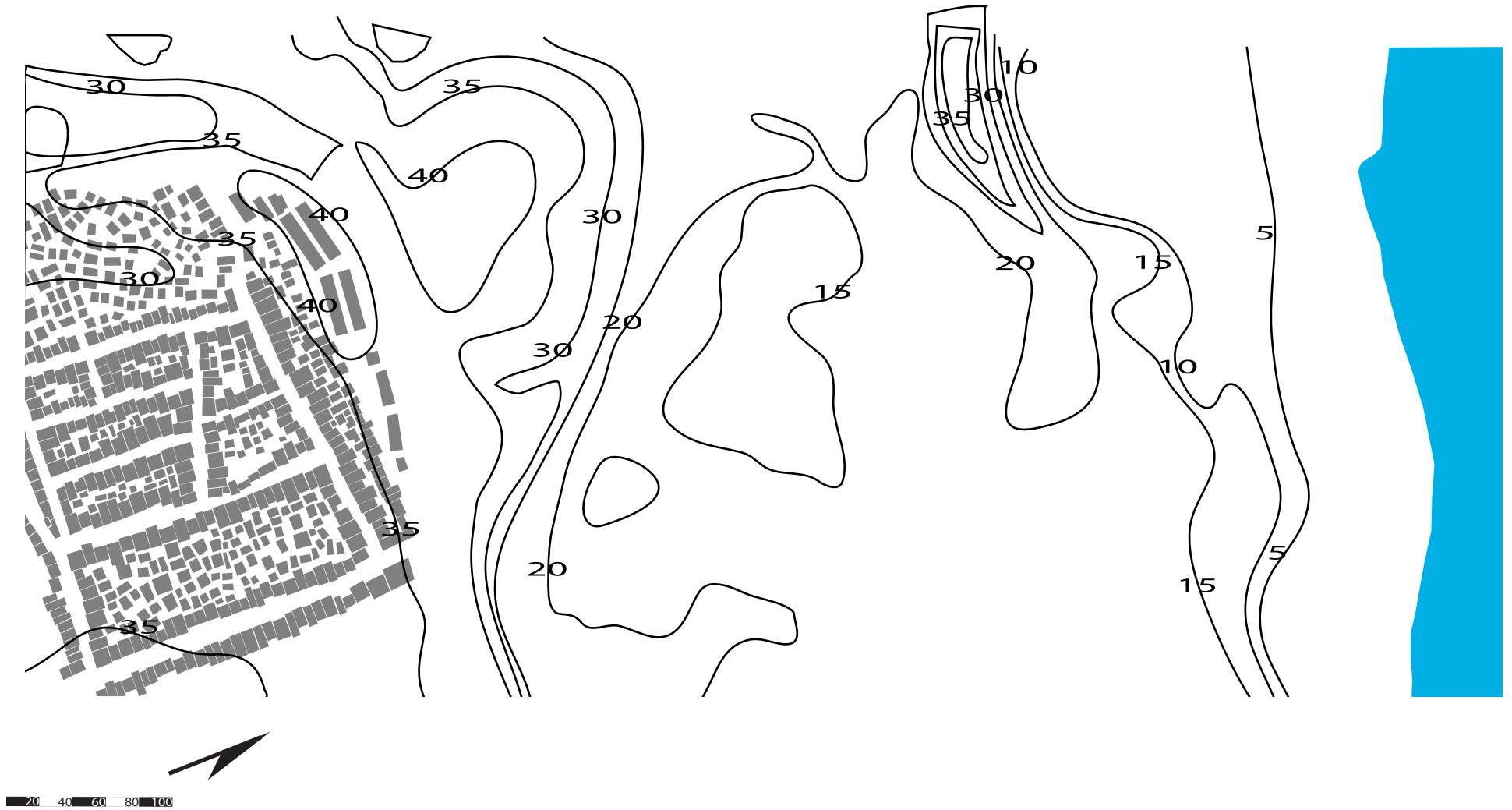


7. building heights



Taller buildings are all concentrated on the main streets.

8. topography



The topography around the public housing is the most pronounced in the area.

9. proposed site study

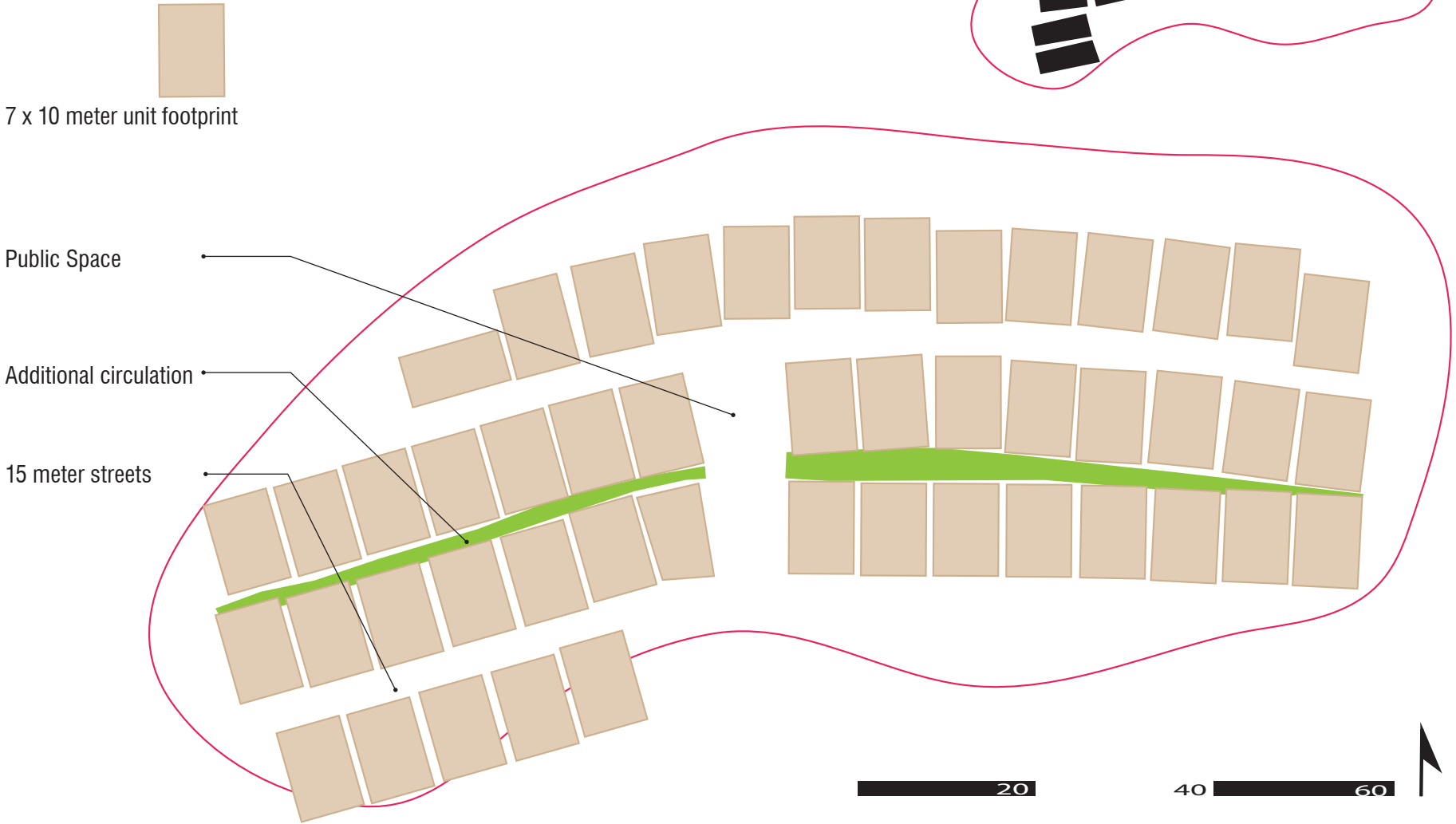


Diagram assessing potential of the site.

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Interviews

(Most of these interviews were conducted in groups together with Dominican architecture students working towards their degrees at the UNPHU. They were conducted in English and Spanish. I am grateful for the time and patience afforded to our research group by the Dominican students without whom this entire effort would not have been possible. Also, I would like to thank the community members who generously shared their time and knowledge. Their names are not reprinted here for confidentiality reasons.)

Arq. Marcos Barinas, Red Caribena de Urbanismo y Arquitectura

Dr. Luis E. Martinez, Sub-Gerente General Técnico, Banco Nacional de la Vivienda

Arq. Raúl De Moya, A & P Architects

Arq. Sina del Rosario Cabral, CONAU

Arq. Monica Sanchez

Members of SODECA, which is the El Caliche community organization.

Photographs

Unless otherwise noted all the photographs were taken by the author and the MIT research group in January 2003.